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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/470,343	12/22/1999	Bernardo Martinez-Tovar	P-1583	6032
23413	7590	06/22/2005	EXAMINER	
CANTOR COLBURN, LLP			CHAMBERS, TROY	
55 GRIFFIN ROAD SOUTH			ART UNIT	
BLOOMFIELD, CT 06002			PAPER NUMBER	
			3641	

DATE MAILED: 06/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/470,343	MARTINEZ-TOVAR ET AL.	
	Examiner	Art Unit	
	Troy Chambers	3641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-9, 11-18, 35 and 36 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-9, 11-18 and 35 is/are rejected.
- 7) ☒ Claim(s) 36 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Objections

1. Claim 36 is objected to because of the following informalities: claim 36 includes two transitional phrases that modify the "layer of metal". In a the previous Office action the Examiner indicated that the subject matter of claim 36 was allowable because the layer of titanium was limited by the transitional phrase "consisting of" which excludes other metals from the bridge. The applicant must amend the claim so that only "consisting of" modifies the layer of metal. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 18 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by PCT Publication WO 9742462 issued to Martinez-Tovar ("MT"). MT discloses a semiconductor bridge device 10, comprising: a silicon or sapphire substrate 12 (pg. 11, ll. 29-30); an electrical bridge structure disposed on the substrate 12 (fig. 1), the bridge structure comprising a layer of semiconductor material; a base layer of titanium (pg. 10, lines 29-30) substantially free of tungsten on the bridge section and *disposed on the*

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semiconductor material; the bridge structure comprising a bridge section 14c extending between pad sections 14a/b; a pair of aluminum lands 16a/b (pg. 9, ll. 13-36); a pair of electrical leads 32 a/b; and, a capacitor connected to said leads 32 a/b (pg. 24, ll. 24-29). MT discloses a substrate comprises silicon with a silicon dioxide layer (pg. 8, ll. 16-21). MT discloses a substrate comprising sapphire (pg. 8, ll. 24-27). MT discloses a semiconductor bridge wherein the material having a negative coefficient of electrical conductivity comprises polycrystalline silicon (claim 18). For the purposes of searching for and applying prior art under 35 U.S.C. 102 and 103, absent a clear indication in the specification or claims of what the basic and novel characteristics actually are, "consisting essentially of" will be construed as equivalent to "comprising." See, e.g., PPG, 156 F.3d at 1355, 48 USPQ2d at 1355 ("PPG could have defined the scope of the phrase consisting essentially of" for purposes of its patent by making clear in its specification what it regarded as constituting a material change in the basic and novel characteristics of the invention.").

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-3, 6-8, 11, 13-15, 18 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. 4976200 issued to Benson in view of DE 19721929 issued to Weiss.

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6. With respect to claims 1, 12 and 18, Benson discloses a semiconductor bridge conductor comprising a substrate 12; an electrical bridge structure comprising a bridge section 16 and pad sections (unnumbered in dotted lines in Fig. 1). The pads are larger than the bridge section. The pad and bridge sections each comprise a layer of metal 17 disposed on a layer of semiconductor material 20. A pair of conductive lands overly each pad section as shown in Fig. 1.

Benson does not disclose a layer of metal comprising titanium or pre-conditioned titanium. Weiss discloses a semiconductor igniter that including a hydrided titanium layer 2 hydrided at 350 deg. C (Abstract).

At the time of the invention, one of ordinary skill in the art would have found it obvious to provide the semiconductor bridge device of Benson with the hydrided titanium layer 2 of Weiss. The suggestion/motivation for doing so would have been to provide an igniter that has a lower energy transfer (Abstract) and in which the layer 2 can reliably function in the domain of a few millijoules (col. 1, ll. 34-47).

7. With respect to claim 2, Benson discloses lead wires 22.

8. With respect to claim 3, Benson discloses an electrical energy source 24.

9. With respect to claim 6, Benson discloses a substrate 18 comprising silicon dioxide.

10. With respect to claims 7 and 8, semiconductor bridge layer 20 comprises silicon.

11. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Benson in view of U.S. 4708060 issued to Bickes as applied to claim 1 above, and further in view of Bickes. Benson discloses the use of undoped silicon for use on the bridge layer 20

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(col. 3, line 67- col. 4, line 1). Not disclosed is the use of crystalline silicon. Bickes discloses the use of polycrystalline semiconductor material (col. 5, ll. 9-37). At the time of the invention, one of ordinary skill in the art would have found it obvious to provide the ignitor of Benson with the polycrystalline silicon of Bickes. The suggestion/motivation for doing so would have been to optimize manufacturing costs benefits (col. 5, ll. 28-32).

12. With respect to claim 11, refer to col. 5, lines 30-37.

13. Claims 13 and 14 are method-of-making claims and not given patentable weight.

14. With respect to claim 15, refer to Fig. 1, in which lands 14 cover metal layer 17.

15. With respect to claim 35, Benson discloses a semiconductor material comprising silicon. Hence, it is assumed that the properties are inherently the same as claimed by the applicant.

Response to Arguments

16. Applicant's arguments filed 06/09/05 have been fully considered but they are not persuasive. Applicant argues that the specification provides ample support for the exclusion of tungsten. However, a search of the applicant's specification does not reveal disclosure expressly excluding tungsten. Moreover, applicant's assertions of what is included or excluded from the claims must find explicit support in the specification. Applicant further argues, "The passing reference to titanium in the English language abstract that accompanied the Weiss '929 reference does not appear to reflect the content of the reference and should not be relied upon." However, the abstract is clear in that it discloses:

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A thin film igniter element for pyrotechnic active materials consists of a substrate (4) bearing two electric contacts (1) connected together by a chemically and thermally active fuse bridge layer (2) which consists of a hydrided hafnium and/or titanium layer and which is preferably initiated by a plasma discharge. Preferably, the fuse bridge layer (2) consists of hafnium-free TiH_x ($x = 0.5$ to 2.0), titanium-free HfH_x ($x = 0.025$ to 2.0) or a hydrided hafnium-titanium mixture. Also claimed is production of the above thin film igniter element by (a) depositing and structuring a hafnium and/or titanium layer in accordance with the geometry of the fuse bridge layer (2) and the contacts (1); and (b) hydriding the layer preferably at about 350°C .

The abstract is more than sufficient to enable one of ordinary skill in the art to make and use a thin film igniter as disclosed. Hence, the abstract qualifies as prior art even though there is not mention of the titanium layer. Applicant makes further arguments relating to the applicability of a hafnium hydride bridge on a layer of SiO_2 . The first argument on page 10 of the applicant response assumes that the abstract is insufficient and, therefore, the rejection is improper. However, as discussed above, the mention of titanium in the abstract qualifies as prior art. Applicant also argues that there was not provided a source of motivation to apply a hafnium hydride bridge to a device comprising a silicon bridge covered by metal (tungsten). However, the examiner's rejection was used to point out that it was obvious to *replace* the bridge structure of Benson with one that provides a low energy transfer.

Conclusion

17. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Troy Chambers whose telephone number is (703) 308-5870. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael J. Carone, can be reached at (703) 306-4198.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-4177. The fax phone number for the organization where this application or proceeding is assigned is (703) 306-4195.

TC
6/16/05


MICHAEL J. CARONE
SUPERVISOR
EXAMINER